

REMARKS

Claims 1-4 are currently pending. In view of the following remarks, Applicants request the favorable consideration and allowance of claims 1-4.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (U.S. Patent No. 6,983,636) in view of Shvets et al. (U.S. Patent Publication No. 2003/0175163). The Examiner takes the position that the combination of Johnson and Shvets teach or suggest the features recited in claims 1-3. Applicants respectfully disagree.

Johnson discloses a calibration apparatus and method to estimate the dispense output from a low volume, non-contact, liquid dispensing systems that may be applied for every hardware configuration.

Shvets discloses a multi nozzle dispensing head for a dispensing assembly for liquid droplets of 10 ul or less. The dispensing assembly comprises a pressurized liquid delivery source feeding a dispenser including a metering valve and the multi nozzle dispensing head. The dispensing head comprises a bored primary nozzle feeding a manifold forming a split channel which in turn feeds bored secondary nozzles.

In contrast to the claimed invention, Johnson discloses a multi-channel dispensing device that is calibrated by external calibrating means. For instance, the volume that is actually dispensed is measured by the gravimetric or spectrometric measuring methods.

Shvets describes a multi-channel dispensing head in which a calibration of the individual dispensing channels is not provided. A metering valve 16 is arranged at the input of the distributor. Thus, Shvets does not provide a flow sensor. The individual paths in the distributor 1 between the input and the individual outputs do not have the same fluidic resistance, which is already proven by the different path length. However, because of the joint unit of the first path section and the identical constructions of the last path section, the differences due to the average path sections of different length are small enough to dispense a

sufficiently identical volume via all the dispensing channels. Variations in the dispensing volume between the individual dispensing channels due to geometric tolerances cannot be compensated. The dispensing volume is determined for all dispensing channels simultaneously by the opening duration of the metering valve 16.

Shvets does not teach or suggest a distributor with an identical fluidic resistance for the individual connections between its input and the individual outputs nor is a flow sensor arranged at the input of the distributor.

In addition to the above distinctions, it is submitted that there is no motivation to combine the cited references to disclose the claimed invention. Moreover, even if an additional valve at the input of the distributor according to Shvets is integrated in a device according to Johnson, the dispensing volume of the individual channels is already controlled by the valves in the individual dispensing channels. In other words, there would be no need to combine the teachings of these two cited references.

Furthermore, if a valve at the input of the distributor according to Shvets were substituted for the valves in the individual channels according to Johnson, an optical detection of the dispensed individual dispensing volumes would be useless because the dispensing of the individual dispensing channels could no longer be controlled by only one valve at the input of the distributor and, therefore, the detected dispensing volumes would no longer be usable as control variables.

Thus, it is submitted that neither cited reference either alone or in combination teach or suggest a multi-channel dispensing device with a distributor with an identical fluidic resistance for the individual connections between the input and the individual outputs and a flow sensor at the input of a distributor. Therefore, Applicants respectfully request the withdrawal of the rejection of claim 1.

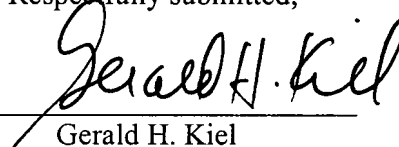
Claims 2 and 3 are dependent upon claim 1. It is submitted that claims 2 and 3 recite

patentable subject matter for at least the reasons mentioned above. Therefore, Applicants request the withdrawal of the rejection of claims 2 and 3 under 35 U.S.C. 103(a).

In view of the above amendments and remarks, it is respectfully submitted that the claims now clearly recite the patentable features of the present invention. Accordingly, reconsideration and withdrawal of the outstanding rejections and an issuance of a Notice of Allowance is respectfully requested. Should the Examiner feel that a telephone conference with Applicant's attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,

By: _____



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